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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,085	03/23/2006	Jong C. Ye	USU030349US	2564

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BRIARCLIFF MANOR, NY 10510

EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2611

MAIL DATE	DELIVERY MODE
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05/07/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,085	Applicant(s) YE, JONG C.	
	Examiner Kevin M. Burd	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Drawings

1. Figures 1, 4A and 4B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The examiner requests information regarding published documents from the named inventor or under the assignee that discloses features of the claimed invention. Please see MPEP 704.11. Documents such as the reference cited below, which was provided in a co-pending application of the assignee and shares a number of the same figures as the instant application and discloses the recited features of the claims, are requested.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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3. Claims 1-7 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-7 discloses a process that is not tied to another statutory class not transforms underlying subject matter to a different state or thing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 2, 4, 5 and 8-14 are rejected under 35 U.S.C. 102(a) as being anticipated by van der Schaar et al “Fully Scalable 3-D Overcomplete Wavelet Video Coding using Adaptive Motion Compensated Temporal Filtering”, International Organisation for Standardisation ISO/IEC JTC1/SC29/WG11 Coding of Moving Pictures and Audio, Shanghai, October 2002.

Regarding claims 1 and 4, van der Schaar discloses a method for de-noising video signals using the video encoder shown in figure 3. The incoming signal is input to a wavelet transformer and separated into N bands. The encoder can employ different temporal decomposition levels and GOF sizes for each band (figure 6 and page 6). van der Schaar discloses wavelet coefficients are generated by shifting one band and performing for each shift a one-level spatial decomposition (page 4). Figure 3 discloses filters that will remove noise.

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Regarding claim 2, figure 3 discloses the temporal filters.

Regarding claim 5, van der Schaar discloses the LL bands might have a very large GOF (page 5) and figure 6 discloses the temporal decomposition levels for the LL spatial band (page 6).

Regarding claims 8 and 12, van der Schaar discloses the video encoder shown in figure 3. The video encoder comprises a wavelet transform, means for separating the bands into groups of frames, means for filtering the frames in the motion estimation blocks and the temporal filtering blocks and blocks for texture coding the filter signals. Additional information is provided on pages 4-7.

Regarding claims 9-11, van der Schaar discloses the decomposition levels in figures 6 and 7.

Regarding claims 13 and 14, van der Schaar discloses wavelet coefficients are generated by shifting one band and performing for each shift a one-level spatial decomposition (page 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over van der Schaar et al "Fully Scalable 3-D Overcomplete Wavelet Video Coding using Adaptive

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Motion Compensated Temporal Filtering”, International Organisation for Standardisation ISO/IEC JTC1/SC29/WG11 Coding of Moving Pictures and Audio, Shanghai, October 2002 in view of Berkner et al (US 2003/0086623).

Regarding claim 3, van der Schaar discloses the method stated above. van der Schaar does not disclose the step of using the wavelet de-noising techniques of soft-thresholding or hard-thresholding. Berkner discloses de-noising may be performed by setting all coefficients below a given threshold to zero. This technique is known as hard-thresholding and is well known in the art. As an alternative, soft-thresholding, e.g., shrinking the coefficients above the threshold toward zero by the amount of the threshold can also be considered (paragraph 0069). These techniques are well known and such techniques may be advantageously used for overcomplete wavelet decompositions (paragraph 0069). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the wavelet de-noising techniques of Berkner which are advantageously used in overcomplete wavelet decompositions into the method of overcomplete wavelet decompositions of van der Schaar.

6. Claims 6, 7 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over van der Schaar et al “Fully Scalable 3-D Overcomplete Wavelet Video Coding using Adaptive Motion Compensated Temporal Filtering”, International Organisation for Standardisation ISO/IEC JTC1/SC29/WG11 Coding of Moving Pictures and Audio, Shanghai, October 2002 in view of Sano et al (US 2003/0002742).

Regarding claims 6, 7 and 15, van der Schaar discloses the method and encoder stated above. van der Schaar does not disclose interleaving the wavelet coefficients. Sano discloses an image compression method and apparatus (abstract) where the coefficient values of each of the subbands of the decomposition levels are re-arranged by interleaving (paragraph 0049). It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the interleaving of Sano into the method and encoder of van der Schaar to provide encoding that will be more resistant to noise and interference and will allow the encoded data to be properly recovered at the desired destination.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ye et al (US 2006/0008000) discloses the video encoder of circuit 1. The reference also discloses the interleaver in figure 2, the 3-D overcomplete Wavelet coding in figures 4A and 4B and the overcomplete wavelet expansion using low band shifting method algorithm for two level decomposition in figure 6. Smith et al (US 5,974,186) discloses the video coding system of figures 1 and 2. This system would also read on the pending claims of the invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
5/5/2010